

Commercializing Small Farms: Reducing Transaction Costs

Prabhu Pingali, Yasmeen Khwaja and Madelon Meijer

ESA Working Paper No. 05-08

October 2005

Agricultural and Development Economics Division

The Food and Agriculture Organization
of the United Nations

www.fao.org/es/esa

ESA Working Paper No. 05-08

www.fao.org/es/esa

Commercializing Small Farms: Reducing Transaction Costs

October 2005

Prabhu Pingali

Agricultural and Development
Economics Division
Food and Agriculture Organization
Italy
e-mail: prabhu.pingali@fao.org

Yasmeen Khwaja

Agricultural and Development
Economics Division
Food and Agriculture Organization
Italy
e-mail: yasmeen.khwaja@yahoo.co.uk

Madelon Meijer

Agricultural and Development
Economics Division
Food and Agriculture Organization
Italy
e-mail: madelon.meijer@fao.org

Abstract

Broad changes are taking place in agrifood systems worldwide. These changes are driven by economic development, increase in per caput incomes, changing technology and urbanization. Consumers are changing their dietary preferences and shopping habits, resulting in substantial organizational and institutional changes throughout the food marketing chain. Growing concentration at all levels is taking place, particularly in the retail sector, and private sector standards for food quality and safety are proliferating. Increasingly exchange is arranged through the use of contracts. These changes have significant implications for growth, poverty and food security. For the small farmer in particular there are difficulties to meet the standards and contractual requirements. They are faced with a new set of transaction costs that emerge from dealing with a food system characterized by different rules, regulations and players. Increased transactions costs deter entry of small farmers into the market. This paper looks at required interventions aimed at reducing transaction costs to encourage increased farmer participation in competitive markets.

Key Words: Food systems, Agricultural commercialization, Transaction costs, Small farmers, Policy.

JEL: Q13, Q18, D23.

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever of the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

1. Introduction

Food markets in developing countries are undergoing profound changes fueled by economic development, increases in per capita incomes, changing technology, and urbanization. Higher incomes and increasing numbers of women in the labor force mean greater demand for high-value commodities, processed products, and preprepared foods. Urbanization increases the scope for economies of scale in food marketing and distribution, while reductions in transaction costs increase the size of the market for distributors and retailers. The result is an impressive increase in the volume of food marketing handled by supermarkets, but also substantial organizational and institutional changes throughout the food-marketing chain (Dolan, Humphrey and Harris-Pascal 2001). Such changes include the setting of private grades and standards for food quality and safety and the adoption of contracts between buyers and sellers at various points along the food-marketing chain.¹ Subcontracting for products of specified quality and traits is likely to proliferate as a form of interaction between retail food chains and producers. If regions where supermarket retailing is more developed (e.g., Latin America) are a precursor of what will follow elsewhere, then supermarkets and large-scale distribution will progressively dominate the food-marketing chain in urban areas.

However, concentration of food trade in the hands of a few retailers and large market intermediaries threatens the existence of small traders and small businesses, central

¹ See Reardon and Berdegúe (2002) and Reardon et al. (2003) for a more comprehensive coverage of the issues related to the proliferation of supermarkets.

“spot” food markets, and neighborhood stores. On the production side, such trends may mean the gradual disappearance of those smallholders who are unable to meet the private standards of health and safety set by large retailers and wholesale buyers as well as neighborhood stores and spot wholesale markets (Dolan, Humphrey and Harris-Pascal 2001; Reardon and Berdegué 2002).

The pressures to meet the requirements of a more exacting food system have brought with them a renewed interest in small farm welfare. For the small farmer there are difficulties to commercialization that arise from poor public good provision that hinders market exchange and a new set of transaction costs that emerge from dealing with a food system characterized by different rules, regulations, and players.

Although agricultural commercialization puts increased emphasis on specialization, that is not confined to the production of high-value crops. For many farmers the transition to commercial staple crop production is far more pertinent. The structural changes in the food system brought about by commercialization have raised the costs of exchange for both staple and high-value crop producers. These *transaction costs* are a significant variable that can inhibit small farmer entry into competitive markets. Even commodities are becoming differentiated products because of the particular requirements to meet the quality, size, and delivery standards, and new transaction costs have emerged that have raised the cost of entry even more into certain product markets.

The principal challenge confronting governments and the international development community is to ensure that smallholders and other rural poor benefit from commercialization, either through participation in the market or by successfully exiting agriculture and finding employment in different sectors. There is some compelling evidence to suggest that increased transaction costs deter entry of small farmers into the market. Thus, interventions aimed at reducing transaction costs could encourage increased farmer participation in competitive markets.

Here we consider the relationship between transaction costs of small farmers and their potential to trade in domestic as well as international markets. The next section looks at the key issues facing small farmers in the commercialization process. Section 3 identifies the constraints that prohibit market entry for many small farmers with the emphasis on transaction costs. Section 4 looks at how the private sector can overcome costs of market participation by small farmers. In section 5 we consider the policy focus.

2. Commercial Transformation of Food Production Systems

The issue of agricultural commercialization and the small farmer is by no means new. Most developing countries have witnessed agriculture “moving away from traditional self-sufficiency” to an activity where “farm output is . . . more responsive to market trends” (Pingali and Rosegrant 1995, 172). It has long been understood that with increasing economic growth, small farm production systems could not remain static and would need to gear themselves to some degree of commercialization for their survival. The commercialization process today has a very different face from even that of 10 years ago. What is new in the story of commercialization is the focus on agribusiness, and the

scale at which agribusiness is influencing the process of change. There is a much greater degree of integration between producers and the output market, with a strong emphasis on standards in relation to quality and safety. In this section we discuss the evolution from subsistence to commercial production systems and ask whether small farmers can be successfully integrated into the new agrifood system.

Food production systems can be characterized as subsistence, semicommercial, and commercial (Pingali and Rosegrant 1995). Increased commercialization shifts farm households away from traditional self-sufficiency goals and toward profit- and income-oriented decision making; farm output is accordingly more responsive to market needs. The returns to intensive subsistence production systems that require high levels of family labor generally decline relative to production for the market with predominant use of purchased inputs. Initially, diversification implies the addition of other crops and other enterprises to staple-based systems. As the level of commercial orientation increases, however, one observes mixed farming systems giving way to specialized production units for the production of high-value crop and livestock products. Commercialization, while leading to an increase in the diversity of marketed output at the national level, also leads to increasing regional- and farm-level specialization.

Although the speed of the above structural transformation differs substantially across countries, they are all moving in the same direction. Timmer (1988) provides a comprehensive discussion on the process of structural change and commercialization of agriculture. For a recent review of agricultural commercialization, see Reardon and Timmer (2005), Pingali (1997), and Pingali and Rosegrant (1995). Empirical evidence on

commercialization trends is provided by Dyck, Huang, and Wailes (1993) for East Asia; Huang and Rozelle (1994) for China; Koppel and Zurick (1988) for Southeast Asia; and Naylor (1992) for Indonesia.

While economic growth and diet diversification have been the driving forces of agricultural commercialization, the move toward integration into the agrifood system is induced by globalization trends. Globalization has resulted in the rapid growth of world trade, internationalization of production by multinational corporations, and declining informational and communications costs associated with information technology. The potential trade² benefits for agriculture arise from two aspects. The first stems from the possibility of direct increased exposure of agriculture to international competition. The ability to access global markets and specialize in areas of comparative advantage could yield high gains for this sector. The second stems from the indirect effects of increased international trade on the growth of nonagricultural sectors, changing the domestic demand for agricultural goods both quantitatively and qualitatively (Pingali and Khwaja 2004).

Given the potential for high rewards, the structure of food systems has radically altered with globalization. Traditional food systems were essentially *production* systems that were highly linear and involved only rudimentary processing and minimal distribution. Modern food systems, on the other hand, are highly integrated with greater forward and backward linkages and significantly involve the private sector in determining standards and market regulations (Rondot, Biénabe, and Collion 2004). Moreover, they are systems

that exhibit an ever increasing degree of technological and process innovation. As such these modern food systems are much more discriminatory in terms of who is able to enter.

An inspection of any modern food chain illustrates that the relationships within the chain are much more complex. This implies, in turn, that there are far more informational uncertainties within the food system resulting in having to exchange on a different contractual basis than before. New standards require better screening and monitoring precisely to ensure quality and safety requirements (Boehlje 1999). These informational requisites incur costs that tend to diminish with farm size. Thus, entering the food system on a competitive basis is problematic for small farmers because of physical investments needed to enter but also because of the transaction costs associated with the new agricultural market.

Implications of Commercialization for the Small Farmer

Small farmers face two main difficulties in trying to adapt to modern food systems. The first concerns their ability to commercialize from production systems that are often semi- or fully subsistence, and the second concerns the actual crop or enterprise choice.

There is a considerable literature that testifies to the productive efficiency of small farms. On the basis of that, it is argued that small farms, if they can overcome some constraints, are well placed to enter markets. A number of empirical studies, among them those by Van Zyl, Millor and Parker (1996) and Binswanger and Elgin (1992), conclude that

² Throughout this paper we assume that trade refers to *both* international and domestic markets.

small-scale family farms tend to be more productive than large farms. Eastwood, Lipton and Newell (2004) present an extensive review of the literature on small farm productivity. The major reason cited for higher levels of efficiency is the higher productivity of farm-family labor and lower supervision costs compared to large farms.

However, that efficiency is often rooted in traditional crop production, often for own-consumption purposes. The difficulty for small farmers is whether the existing production structures can be geared toward the market and at what cost. The alternative is to remain in a form of production that is semi- or fully subsistence. Over time, subsistence farming in any form is not a viable activity for safeguarding household food security and welfare (Pingali 1997). What policymakers then need to consider is what the best exit strategies are for farmers who cannot remain in farm production.

The rapid changes in the food system have put increased pressures on small farmers to diversify away from staples and harness the lucrative gains that derive from the production and trade of high-value crops. This often seems to imply that small farmers face an either/or option in terms of their crop choice. Small farms either stay in staples, which are regarded as unprofitable, or they make the changes to shift to alternative high-value production. The potential gains from high-value crops tend on average to be higher than those for staples even though production of high-value crops can be accompanied by greater uncertainty and risk. For small farmers specializing in high-value output, a critical question remains as to whether their size can profitably support such activities long term.

In addition, to a large extent crop choice is determined a priori by the land potential available to small farmers. So, while high-value crop production may promise higher rewards, that option is not open to all small farmers. For some small farmers, at best, commercialization can offer the possibility of some diversification into nonstaples, but not a total specialization. So-called high-potential lands may be able to make a permanent transition to high-value crops, but low-potential and marginal lands tend to be best suited to traditional crops, which are often staples (Pingali 1997). Moreover, for some farmers any kind of production on marginal lands may not be feasible long term, in which case the emphasis needs to be on developing nonfarm rural employment to support production.

While many small farms have a comparative advantage in staples production and will continue to do so, the income generated from that commercial activity alone is unlikely to maintain household welfare long term. We are more likely to see diversification in the portfolio of income sources than in terms of crops for such households. Migration to towns by one family member or migration into rural nonfarm employment tend to be likely strategies for increasing household income.

The players, rules, and relationships within new commercialized food systems are often alien to the small farmer (Napier 2001) and raise the cost of entry into the market in two ways. First, there are increased costs of production stemming from the investments needed to meet the requirements of the output market. Second, there is a greater level of exchange with new players in input and output markets, which is inevitably more costly.

Not surprisingly, the new food systems tend often to favor scale. Moreover, poor public good provision and the absence of adequate regulation can interact with the specific requirements of commercial markets to exacerbate transaction costs further. The distinction between high-potential and low-potential areas in the transition toward commercialization takes on a much broader meaning. It is no longer restricted to the physical land capabilities of an area or region but also to the ability of the wider rural sector to adapt to change.

3. Transaction Costs in Modern Agrifood Systems

The issue of transaction costs has always figured in agricultural markets. In many instances they explain missing markets—for example, in credit markets (Besley 1994), labor markets (Bardhan 1984), and land (Carter and Mesbah 1993) as well as the product markets (Stiglitz 1998; Holden and Binswanger 1998). Such failures can result in alternative institutional arrangements (Binswanger and Rosenzweig 1986; Timmer 1997) such as sharecropping and interlinked markets (Bardhan 1980; Braverman and Stiglitz 1982; Binswanger, Khandkar, and Rosenzweig 1993).

Before elaborating on the new set of transaction costs that has arisen with the appearance of modern food systems, we briefly elaborate on how transaction costs can be defined.

Williamson (1979, 1993, 1996) defines transaction costs as a trade-off between the costs of coordination within an organization and the costs of transacting and forming contracts

in the market. That trade-off will depend on the magnitude of the transaction costs. According to the seminal work of Coase (1937), it is precisely because of the presence of transaction costs associated with information, negotiation, monitoring, coordination, and enforcement of contracts that intermediary firms emerge to economize on such costs. A substantive volume of literature has been built on this work and applied to agricultural markets. Building on Coase's work, Hobbs (1997) classified transaction costs into information, negotiation, and monitoring or enforcement costs. Information costs, for example, arise ex ante of an exchange. Negotiation costs are the costs of physically carrying out the transaction, while monitoring costs occur ex post of a transaction and include the costs of ensuring that the terms of the transaction (quality standards and payment arrangements) are adhered to by the other parties involved in the transaction. Others have distinguished transaction costs between tangible (transportation costs, communication costs, legal costs, etc.) and intangible (uncertainty, moral hazard, etc.) costs (Cuevas and Graham 1986; Holloway et al. 2000 in Birthal, Joshi, and Gulati 2005).

In addition to the above, with the rise of modern food systems, a new set of transaction costs has arisen because of the standards required in terms of quality, size, and delivery. Private companies, in order to capture markets and differentiate their products, put ever more stringent conditions on suppliers. Customers are increasingly willing to pay for product attributes that include convenience, taste, variety, high quality, and low caloric intake (Napier 2001). It is precisely because many small farmers are locked into traditional modes of production far removed to meet the requirements demanded by modern food systems that transaction costs have tended to become prohibitive. These

factors go some way to explain why smallholder farmers do not participate fully in commercialized agricultural markets. This section considers the nature of transaction costs and how they constrain the possibility to enter markets.

Transaction costs are faced by all actors in the food system. We focus in particular on agrifood companies trying to contract small farmers and small farmers trying to integrate into the modern food supply chain. The tendency is to move away from the spot market to other forms of vertical coordination (Boehlje 1999). That is because there is a continuous need for information sharing on consumers' changing preferences, on quality requirements through grades and standards, and on high postproduction and service value addition, which requires specific investments. Open-access markets can no longer meet consumer needs for accurate information on quality and safety attributes (Van der Vorst 2005).

Transaction Costs Specific to the Agribusiness Firm

Modern food systems are typically characterized by near-monopsonistic markets. Whilst the number of potential suppliers (small farms) is large, the costs of exchange—the transaction costs—between small farmers and a few large buyers can be substantive. If the transaction costs are prohibitive, exchange will not take place.

The transaction costs that specifically emerge from dealing with large numbers of small farms are as follows (Hayes 2000):

- The bureaucratic costs associated with managing and coordinating integrated production, processing, and marketing.

- The opportunity cost of time used to communicate with farmers and coordinate them.
- The costs involved in establishing and monitoring long-term contracts.
- The screening costs linked to uncertainties about the reliability of potential suppliers or buyers and the uncertainty about the actual quality of the goods.
- The transfer costs associated with the legal or physical constraints on the movement and transfer of goods. They also include handling and storage costs, transport costs, and so forth.

While some transaction costs are related to physical costs such as transportation and packaging, other costs are the outcome of informational asymmetries and contract enforcement problems that force agents to incur expenditures associated with search, supervision, and management.

Farm-Specific Transaction Costs

For farmers, transaction costs are those associated with participation in the—increasingly vertically coordinated—markets. Such costs can be household specific, such as access to assets, or they can be the same for all farmers in a particular location, such as land quality, or producing a specific product, such as perishable fruit and vegetables. It is the bundle of transaction costs that farmers face that determines market participation.

Interactions between the unique features of food system participation and other household- and location-specific characteristics can further exacerbate transaction costs. Farmers will not enter markets when the value of participating is outweighed by the costs of undertaking the transaction (Sadoulet and de Janvry 1995).

Specific transaction costs can arise in both the input and output markets and affect market participation. Evidence from Bangladesh (Ahmed 1989) found that transaction costs resulting from loans from formal lenders are higher than those of loans from informal lenders because the borrower is usually known. By contrast, transaction costs per unit of loan decrease with loan size, and this was much faster for formal than for informal loans.

Transaction costs in output markets, for example, can affect the choice of market channel farmers use. In Ethiopia grain brokers have been shown to be the preferred choice among small farmers (Gabre-Madhin 1999). Farmers identify where to trade and then decide on whether to use a broker to search on their behalf. High transaction costs were linked to increased broker use because farmers spent time searching for information on markets and prices. Where farmers had better information on prices and market because of social networks, broker use was significantly less.

Location-Specific Transaction Costs

Variances across regions matter in determining the level of transaction cost. Farmers in high-potential areas may experience a lower total level of transaction costs than those in low-potential areas. First, higher-potential areas have more reliable access to production inputs and markets and hence face lower costs and risks associated with the switch to high-value crop production—the exception being the irrigated rice lowlands, where the drainage costs associated with growing nonrice crops tend to limit short-term movement

between rice and other crops, particularly in the wet season (Pingali, Hossain, and Gerpacio 1997).

Second, high-potential areas generally have better transport and communication infrastructure and hence relatively lower search and information costs. Where road density is low (often the case in low-potential areas), accordingly transaction costs associated with accessing markets and information tend to be high. Poor road infrastructure increases transportation time and therefore costs. The price that farmers receive will be net of some of these costs if not all, reducing the incentive to enter commercial agriculture. Distance to a paved road can have a significant negative effect on fertilizer use because of the transaction costs associated with the time it takes to search for inputs (see Strasberg et al. 1999). Poor communication prevents efficient access to market information, increasing search and monitoring costs.

Crop-Specific Transaction Costs

Transaction costs also vary by product. High-value crops, which are often perishable (such as fish and vegetables), are typically associated with high transaction costs. On the one hand, these stem from transportation costs due to poor infrastructure such as rural roads and a lack of a cold chain. Such costs can be further exacerbated the higher the distance to markets. On the other hand, intangible transaction costs arise when an asset-specific investment has been made—such as a milk-cooling tank—or when the seller is facing a monopsonistic buying structure. That increases the risk of buyers behaving opportunistically and defaulting on the contract.

Household-Specific Factors That Influence Transaction Costs

There are a number of household-specific variables that are not so much transaction costs in themselves but have a significant impact on them, such as aversion to risk and uncertainty; social networks and organization; age, gender, and education; and intrahousehold interaction. Such variables all influence the costs of information seeking, negotiating, monitoring, and enforcement.

The prevalence of social networks and organizations may substantially reduce transaction costs. Often such networks ensure cooperation among farmers in the use of scarce and communal resources such as water. Moreover, small farmers may be better placed to understand their local environments in a way that ensures best use of existing resources in an environmentally sustainable way. The use of cooperatives or farmers' organizations to overcome marketing-related difficulties will be addressed in section 4.

Age, gender, and education can affect transaction costs in different ways. Age can often be indicative of farming experience, which makes certain informational and search costs easier and thus cheaper. Transaction costs related to accessing land and credit are much more variable for women than for men. Education matters in terms of reducing the costs of searching for information. Moreover, the time taken to process and act on information decreases with education.

Internal transaction costs occur within the dynamics of intrahousehold interaction and can represent a constraint to the decision-making process in households. In some cases, that may reduce the incentive to enter competitive markets. Zaibet and Dunn (1998) argued that farm households may require a premium to overcome such costs, which is assumed to be proportionally related to the size of the household. Large or extended families may face higher negotiation.

Risk and uncertainty play a pivotal role in explaining the household decision to enter commercial markets. Participation in the market can reduce uncertainty as long as it is supported by better information, communication, and increased access to market outlets. On the other hand, uncertainty may be exacerbated by greater market participation as the security of subsistence is replaced by the insecurity of unstable markets and adverse price trends. Small farmers are unlikely to trade in the known set of risks associated with subsistence for an unknown set of risks that is a function of commercialization.

Households will allocate their limited resources to subsistence and commercial production such that the disutility of risk is balanced against the utility of market goods (Von Braun, De Haen, and Blanken 1991). Hence, the case for the coexistence of various levels of market participation in a location in any given time period.

4. Overcoming Transaction Costs—the Role of the Private Sector

Because transaction costs vary over households and enterprises, commodities, and regions, there is no single innovation or intervention, public or private, that can reduce

them. However, there are a number of ways in which market entry by small farmers can be developed. Those include contract farming, development of farmer organizations for marketing, development of the supply chain for high-value exports produced by smallholders through an appropriate mix of *private* and *public* sector initiatives, and facilitating private sector provision of market information via improved telecommunications (Kydd, Poulton et al. 2004). The role of government is crucial in specifying property rights and enforcing contracts in order to promote specialization and reduce the costs of market exchange (North 2000). Moreover, government policy needs to create incentives and send signals that encourage private sector participation in developing rural economies.

Vertical Coordination to Overcome Costs

The widespread proliferation of supermarkets in the developing world has been seen as an important feature of modern food systems. Their growth potentially enables many small farmers to bypass market failures and substantially reduce their transaction costs.

Contractual arrangements with supermarkets can enhance farmer access to credit and finance, modern inputs, and technologies as well as access to managerial expertise.

Reardon and Berdegue (2002) and Reardon and Swinnen (2004) have shown the positive effects for small farmers of contractual arrangements with supermarkets in Latin America, Africa, and many transition economies.

The development of managerial and technical expertise, which is usually crop independent, gives farmers a comparative advantage in terms of moving across crops

when market conditions change. Even when technological conditions change, such farmers are more likely to adapt because of lower transaction costs than farmers who are using technologies for the first time.

Though there are shown benefits to small farms that have managed to be included in these closely aligned food systems, it is perhaps too early to conclude whether supermarkets benefit small farmers over the long term or not. What is clear, however, is that in the heterogeneous cohort of small farmers, supermarkets tend to target those small farmers whose transaction costs are lower to begin with because of their asset base, human capital, and proximity to markets. Agribusiness, with its emphasis on quality and output, favors high-potential areas and large farmers precisely because of the need for consistency in supply and quality but equally because of the need to reduce transaction costs (Key and Runsten 1999). Evidence from elsewhere shows that contract farming in general favors scale because of the administration costs associated with monitoring (Stanton 2000; Reardon and Barrett 2000).

Swinnen (2005) has provided some compelling evidence that contract farming has proved highly successful for small farmers in some transition economies where the prevailing production structure does not feature large farms. In the absence of choice, the critical issue is not simply that farmers will be able to enter markets but whether those farmers that are party to contracts are farmers whose initial endowments meant they faced lower transaction costs to begin with. Supermarkets pick winners.

Horizontal Coordination to Overcome Costs

For the outsiders the underlying market failures still remain, and their transaction costs can indeed become higher as seeking alternative contractual arrangements outside the system becomes even more costly than before. By its very nature, commercialization demands higher output and quality. The inverse relationship that can exist between scale and transaction costs makes for a powerful incentive for small farmers to coordinate their activities so that they can jointly benefit from reduced transaction costs that are at similar levels to larger production units.

Nevertheless, collaborative action brings with it a whole new set of transaction costs. It is likely that farmers associating will occur only if the benefits from collaboration cover the value of investment needed. Not enough is yet understood about the potential benefits and, particularly, costs. Benefits can be described in terms of increased productivity and increased negotiating power. More information is needed, however, to understand an actor's rationale for participating in producer groups. Better prices are often mentioned; nevertheless some argue that receiving a better price is not the main concern, having a secured market outlet and access to technical assistance and credit being more important (Swinnen 2005). On the potential costs even less is known. Successful association requires management and entrepreneurial skills—"soft" assets that many small producers with little education are less likely to have. Extension agents and nongovernmental organizations are working hard to build capacity in these areas, but no systematic information is available as to the impact of such trainings and the characteristics of farmers that benefit from them.

Examples abound of instances of farmer cooperation. In Andhra Pradesh the development of labor-water exchange allows marginal farmers to obtain irrigation water from neighboring farmers with tube wells and pay in labor services (Deshingkar et al. 2003). The availability of water has enabled year-round production of vegetables. Contract leasing has enabled small and marginal farmers to lease out their lands to outsiders who then supply the land with a tube well and grow a variety of crops ranging from carrots to chilies. The growth of village cooperatives in the dairy and poultry industries in Asia has pointed to a successful way of integrating landless, small, and marginal farmers into the changing food market.

In spite of these successes, we need to exercise some caution. Even where small farmers have coordinated their activities, the underlying trend is that as the process of commercialization advances, there is convergence toward large-scale production. The poultry industry in India started off with numerous small-scale units and was hailed as a victory for the small producer. Over time, the situation has become very different. The industry is now characterized by increasing average holding size (Pingali and Khwaja 2004). The pertinent issue is to understand which particular markets give small farmers a comparative advantage.³ Niche and organic markets may provide a solution for a few farmers, but many farmers are still likely to be excluded.

³ From case studies in Central America, one can deduct that subsectors that require large investments, such as beef and milk, seem to exclude small producers (Regoverning Markets project). On the other hand, labor-intensive production such as fresh fruits and vegetables seem to favor small farmer participation. This

Options and Concerns for the Private Sector

Thus, working together—both horizontally and vertically—can improve the stability of prices/returns, provide better financial returns, improve each actor's ability to supply what the market requires, and provide economies of scale and marketing support (Boehlje 1999; Van der Vorst 2005). Transaction costs diminish as partnerships and trust reduce the need for contracts and expensive negotiation. Vertical coordination contributes to a more efficient system, but two concerns warrant more careful examination.

First, as more efficient systems reduce the need for large numbers of suppliers, policies need to be put in place that facilitate the exit of the producers that will be left out of the system. It needs to be underlined that the issue is not the survival of small farms as such, but ensuring the livelihood and food security of people, including current small-scale producers. A major question is that of risk of exclusion of small farmers from the supply chain.

Second, despite having an economic rationale for working together, actors remain competitors. Point of departure should be to admit that productive units, both in agriculture and industry, pertaining to one of the links in the chain are, at the end of the day, looking for the highest returns (Roldán and Espinal 2000). Any marketing system represents a field of conflicting interests between the actors, and an efficient system necessarily needs to find the balance between the economic interests of each of the actors in the system.

argument is based on the lower transaction costs involved in supervising family labor. One can question how this comparative advantage holds in areas where there is a shortage of labor.

Small farmers in that respect find a very skewed structure in the food system, facing on the one hand a small and reducing number of large food companies and food retailers. On the other hand, at the point of input supply to farmers, large chemical and seed companies are creating patented input supply systems controlled by a small number of companies (e.g., Monsanto and Dekalb Genetics Corporation/Delta and Pine Land, DuPont and Pioneer HiBred) (Napier 2001). Facing this structure, agricultural producers will find it increasingly difficult to negotiate favorable terms of the contract.

The most popular generalized formulas, such as associativity, are at best necessary but not sufficient. A generalized formula does and will not exist due to product- or chain-specific market requirements; therefore any option will need to consider a set of strategic actions and investments, differing by subsector, by the actors themselves in combination with public sector interventions. For example, studies done by Berdegué saw that in the milk products sector, at a minimum there is a need for heavy investments in cooling tanks. In the vegetable sector, there is a need for management of chain coordination, cold chain infrastructure, strategic market knowledge, and farm investments such as greenhouses.

5. Overcoming Transaction Costs—the Policy Focus

Whilst transaction costs are clearly important, a policy focus aimed at reducing the transaction costs of small farmers per se is difficult. Transaction costs tend to be highly

context specific, and because they are not always separable from production costs, it makes identifying policy priorities difficult. The prevalence and level of individual farmer transaction costs is a function of *both* the food system itself and the stage of economic development that prevails in the agricultural/rural sector. Furthermore, transaction costs are very difficult to measure, making it difficult to understand precisely the sources of the costs and hence the corrective action required.

It makes more sense for the public sector emphasis to be on public good provision, generating market efficiencies and institutional reform to encourage private sector participation. It is the combination of both public and private action that enables farmers to enter competitive markets while also generating rural growth to stimulate nonfarm employment. Agricultural transition must be managed within a framework of rural development.

In this section we consider the type of public good provision and the institutional reform that are necessary precisely to create a more level playing field where many more small farmers are able to trade in competitive markets.

Public Good Provision

Policies aimed at the provision of better education, rural infrastructure, and communication have a number of benefits for small farm welfare. For those who can successfully remain in production there is a clear link between public good services and reduced transaction costs. In terms of facilitating exit strategies, public good provision is

vital to reorient the rural economy toward alternative employment opportunities that support changing agricultural systems.

Education substantially reduces informational and search costs, but in a wider context education has to be seen as a fundamental policy priority. As commercialization proceeds, exits from small-scale agriculture are bound to occur. Education not only is necessary for the development of nonfarm sectors in the rural economy but is critical in facilitating labor movements across sectors.

Rural infrastructure investments play a crucial role in inducing farmers to move toward a commercial agricultural system. The emphasis for public investments should be on improving general transport, communications, and market infrastructure, while allowing the private sector to invest in commodity-specific processing, storage, and marketing facilities. Accessible and cost-effective communication systems such as mobile telephones can help generate information and other market-related services. The Internet explosion and related technologies have drastically reduced exchange and search costs in many Organisation for Economic Co-operation and Development countries and may be highly indicative of the benefits to developing countries (Bussolo and Whalley 2002).

Institutional Reform

While economic liberalization provides opportunities for diversification and commercialization, it requires farmers to be highly efficient in their use of water, land, and other resources in response to changing prices (Rosegrant, Schleyer, and Yadav

1995). Efficient land markets and secure property rights are essential to capture agricultural growth (Binswanger, Deininger, and Feder 1993). Where land rights are secure, farmers have the greater incentive needed to invest in land improvements. Secure land rights also make long-term investments more likely. Moreover, land ownership is an important source of collateral that can improve the credit status of farmers, leading to easier access to funding for inputs and so forth (Feder et al. 1988). Individual farmers and households need to be assured “stable engagement” with land and water resources, meaning land tenure and water use rights that are flexible enough to promote comparative advantage in food staples and cash crops. Those rights must be matched by access to rural credit and finance and the dissemination of technology and good practices in water use (DeHaen et al. 2003).

Government schemes to certify quality and safe food according to public regulations are required. This is important for domestic consumption and food safety, and even more so if a country wants to access foreign markets. If a country wants to export, it is necessary that an independent body will guarantee that the produce adheres to the required quality and safety standards. The Codex Alimentarius Commission, jointly serviced by the Food and Agriculture Organization and the World Health Organization (WHO), is charged with the responsibility of developing a food code. Its recommendations are based on the principle of sound scientific analysis and evidence, involving a thorough review of all relevant information. Codex international food standards are developed to protect the health of consumers and ensure fair practices in the food trade. The World Trade Organization’s Agreement on the Application of Sanitary and Phytosanitary Measures

cites Codex standards, guidelines, and recommendations as the preferred international measures for facilitating international trade in food. The focus of the Codex is shifting to take account of the changing global food system.

Competition and trade policies need to address the constraints faced by small farmers.

Often such policies favor scale because of the emphasis on growth. Incentives need to be placed where the costs of setting up agriculture-related businesses are reduced.

Liberalization of domestic markets, through the removal of quantitative restrictions on trade and the opening up of economies to internal trade opportunities, is often a key step in starting or accelerating the process of commercialization. However, the opening up of markets also exposes producers to increased risk given the greater volatility of world prices. Governments have historically intervened heavily in domestic markets to protect and stabilize the prices of agricultural commodities, with the result that domestic producer prices have varied substantially less than international prices. The relationship between diversification and risk is thus crucial in the context of trade and macroeconomic reform designed to align domestic prices more closely with international prices.

Many low-volume markets are associated with high price volatility. Moreover, the diversification “start-up” phenomenon, of high prices for several seasons leading to oversupply and a consequent collapse of prices, is all too common. This can be countered by measures to expand the market by lowering transaction costs, improving external linkages, or providing storage and processing technologies. Effective rural financial

institutions will also assist in risk spreading and in the sharing of the benefits of commercialization more widely across the community and region.

6. Conclusion

The transition process is painful. Before we target transaction costs in an effort to increase small farmer participation we need to bear in mind two points. First, while reducing transaction costs should in principle allow for a greater number of farmers to trade, the ability to enter is not the same as the ability to stay. That is as much a function of other factors as it is of transaction costs. Therefore, interventions need to be cost effective. Public money should not be spent in declining and noncompetitive sectors. Second, transaction costs are household, commodity, and location specific and are subject to constant change. Interventions aimed at targeted reductions in specific costs should not be in the public domain. Public sector interventions are best left for public good provision and institutional reforms to correct incomplete or absent markets. The reduction of transaction costs associated with the specificities of the food system is best left in the hands of the private sector.

To better target interventions and take corrective action, a holistic view is required that analyzes the relationships between agricultural commercialization, chain efficiency, and small farmers. Transaction costs have been shown to play a key role in this, but our understanding is still insufficient, both in terms of analyzing their relationship with production costs and in terms of whether they can be reduced over time. It is

combinations of transaction costs that determine market entry, and very often the sources of transaction costs are not separable, which makes targeting policy difficult. Because of measurement problems, we do not yet know how to address the issues. Some critical issues that require further research include the following:

- Emphasize the heterogeneous nature of the small farmer.
- Identify who wins and who loses and what can be done to reduce the transitional costs of the losers.
- Take a broader look at the whole value chain. How are contractual arrangements determined? What and where are the bottlenecks that ultimately have an impact on small farmers?
- Identify more specific policy recommendations beyond the generalized interventions listed above. This requires more context-specific research. Try to bring lessons learned from these specifics back up to the more generic.

References

- Ahmed, Z.U. 1989. "Effective Costs of Rural Loans in Bangladesh." *World Development* 17 (3): 357–63.
- Bardhan, P.K. 1980. "Interlocking Factor Markets and Agrarian Development: A Review of Issues." *Oxford Economic Papers* 32 (1): 79–98.
- . 1984. *Land, Labour, and Rural Poverty: Essays in Development Economics*. Delhi: Oxford University Press.
- Benham, A., and L. Benham. 1998. "Measuring the Costs of Exchange." Paper prepared for the Second Annual Meeting of the International Society for New Institutional Economics, September 17–19, 1998. Paris.
- Besley, T. 1994. "How Do Market Failures Justify Interventions in Rural Credit Markets?" *World Bank Research Observer* 9 (1): 27–47.
- Binswanger, H.P., K. Deininger, and G. Feder. 1993. "Power, Distortions, Revolt, and Reform in Agricultural Land Relations." In *Handbook of Development Economics*, edited by J. Behrman and T.N. Srinivasan. Amsterdam, North-Holland: Elsevier.

Binswanger, H.P., and M. Elgin. 1992. "What Are the Prospects for Land Reform?" In *Agriculture and Governments in an Interdependent World*, edited by A. Maunder and A. Valdez. Buenos Aires: International Association of Agricultural Economists.

Binswanger, H.P., S.R. Khandkar, and M. Rosenzweig. 1993. "How Infrastructure and Financial Institutions Affect Agricultural Output and Investment in India." *Journal of Development Economics* 41: 337–66.

Binswanger, H.P., and M.R. Rosenzweig. 1986. "Behavioural and Material Determinants of Production Relations in Agriculture." *Journal of Development Studies* 22 (3): 503–39.

Birthal, P.S., P.K. Joshi, and A. Gulati. 2005. "Vertical Coordination in High-Value Food Commodities: Implications for Smallholders." Discussion Paper No. 85, Markets, Trade, and Institutions Division, International Food Policy Research Institute, Washington, D.C.

Boehlje, M. 1999. "Structural Changes in the Agricultural Industries: How Do We Measure, Analyze, and Understand Them?" *American Journal of Agricultural Economics* 5: 1028–41.

- Braverman, A., and J.E. Stiglitz. 1982. "Sharecropping and Interlinking of Agrarian Markets." *American Economic Review* 72 (4): 715.
- Bussolo, M., and J. Whalley. 2002. "Globalisation in Developing Countries: The Role of Transaction Costs in Explaining Economic Performance in India." Project paper, U.K. Department for International Development.
- Carter, M.R., and D. Mesbah. 1993. "Can Land Market Reform Mitigate the Exclusionary Aspects of Rapid Agro-export Growth?" *World Development* 21 (7): 1085–1100.
- Coase, R.H. 1937. "The Nature of the Firm." *Economica* 4: 386–405.
- Cuevas, C.E., and D.H. Graham. 1986. "Rationing Agricultural Credit in Developing Countries: The Role and Determinants of Transaction Costs for Borrowers." In *Agriculture in a Turbulent World Economy*, edited by A. Maunder and U. Renborg. Brookfield, Vt.: Gower.
- De Haen, H., K. Stamoulis, P. Shetty, and P. Pingali. 2003. "The World Food Economy in the Twenty-first Century: Challenges for International Co-operation." *Development Policy Review* 21 (5–6): 683.

- Deshingkar, P., U. Kulkarni, L. Rao, and S. Rao. 2003. "Changing Food Systems in India: Resource-Sharing and Marketing Arrangements for Vegetable Production in Andhra Pradesh." *Development Policy Review* 21 (5–6): 627–39.
- Dolan, C., J. Humphrey, and C. Harris-Pascal. 2001. "Horticulture Commodity Chains: The Impact of the U.K. Market on the African Fresh Vegetable Industry." Working Paper No. 96, Institute for Development Studies, Sussex.
- Dyck, J.H., S.W. Huang, and E. Wailes. 1993. "Structural Change and Competitiveness of the Asian Rice Economies in Taiwan, Korea, and Japan." In *Proceedings of the First Asian Conference of Agricultural Economists*, August 10–13, Seoul, South Korea.
- Eastwood, R., M. Lipton, and A. Newell. 2004. "Farm Size." In *Handbook of Agricultural Economics*. Vol. 3, edited by R.E. Evenson, P. Pingali, and T.P. Schultz. Amsterdam: Elsevier. In press.
- Feder, G., T. Onchan, Y. Chalamwong, and C. Hongladarom. 1988. *Land Policies and Farm Productivity in Thailand*. London: for the World Bank by Johns Hopkins University Press.
- Gabre-Madhin, E.Z. 1999. "Transaction Costs and Market Institutions: Grain Brokers in Ethiopia." Discussion Paper No. 31, Market and Structural Studies Division, International Food Policy Research Institute, Washington, D.C.

- Hayes, D. 2000. "Transaction-Costs Economics and the Evolving Structure of Agricultural Production". In *E-Commerce in Agribusiness*, edited by Schmitz, T.G., C.B. Moss, A. Schmitz, A. Kagan and B. Babcock. Florida: Florida Science Source, Inc.
- Hobbs, J.E. 1997. "Measuring the Importance of Transaction Costs in Cattle Marketing." *American Journal of Agricultural Economics* 79 (November): 1083–95.
- Holden, S.T., and H.P. Binswanger. 1998. "Small-Farmer Decision Making, Market Imperfections, and Natural Resource Management in Developing Countries." In *Agriculture and the Environment: Perspective on Sustainable Rural Development*, edited by E. Lutz. Washington, D.C.: World Bank.
- Huang, J., and S. Rozelle. 1994. "Environmental Stress and Yields in China." *American Journal of Agricultural Economics* 77 (November): 853–64.
- Key, N., and D. Runsten. 1999. "Contract Farming, Small-Holders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production." *World Development* 27 (2): 381–401.

- Koppel, B., and D. Zurick. 1988. "Rural Transformation and the Future of Agricultural Development Policy in Asia." *Agricultural Administration and Extension* 28: 283–301.
- Kydd, J., C. Poulton, et al. 2000. "Globalisation, Agricultural Liberalisation, and Market Access for the Rural Poor." Wye College.
- Lipton, M. 2005. "Can Small Farms Survive, Prosper, or Be the Key Channel to Cut Mass Poverty?" Paper presented at the Food and Agriculture Organization Symposium on Agricultural Commercialisation and the Small Farmer, May 4–5, Rome.
- Napier, R. 2001. *Global Trends Impacting Farmers: Implications for Family Farm Management*. Paper presented at the Pulse Days 2001, Saskatoon. New South Wales, Australia.
- Naylor, R. 1992. "The Rural Labor Market in Indonesia." In *Rice Policy in Indonesia*, edited by S.S. Pearson. Ithaca, N.Y.: Cornell University Press.
- North, D.C. 2000. "Revolution in Economics." In *Institutions, Contracts, and Organisations: Perspectives from New Institutional Economics*, edited by C. Menard. Cheltenham, England, Northampton (MA USA), Edward Elgar.

- Pingali, P.L. 1997. "From Subsistence to Commercial Production Systems: The Transformation of Asian Agriculture." *American Journal of Agricultural Economics* 79 (May): 628–34.
- Pingali, P.L., M. Hossain, and R.V. Gerpacio. 1997. *Asian Rice Bowls: The Returning Crisis?* Wallingford, England: CAB International.
- Pingali, P.L., and Y. Khwaja. 2004. "Globalisation of Indian Diets and the Transformation of Food Supply Systems." Working Paper No. 04-05, Agricultural and Development Economics Division, Food and Agriculture Organization.
- Pingali, P.L., and M.W. Rosegrant. 1995. "Agricultural Commercialization and Diversification: Processes and Policies." *Food Policy* 20 (3): 171–85.
- Reardon, T., and C.B. Barrett. 2000. "Agroindustrialization, Globalization, and International Development: An Overview of Issues, Patterns, and Determinants." *Agricultural Economics* 23: 195–205.
- Reardon, T., and J. Berdegú. 2002. "The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development." *Development Policy Review* 20 (4): 317–34.

Reardon, T., and J.F.M. Swinnen. 2004. "Agrifood Sector Liberalization and the Rise of Supermarkets in Former State-Controlled Economies: A Comparative Overview." *Development Policy Review* 22 (5): 515–23.

Reardon, T., C.P. Timmer, C.B. Barrett, and J. Berdegú. 2003. "The Rise of Supermarkets in Africa, Asia, and Latin America". *American Journal of Agricultural Economics* 85 (5): 1140-1146.

Reardon, T., and C.P. Timmer. 2005. "Transformation of Markets for Agricultural Output in Developing Countries since 1950: How Has Thinking Changed?" Chapter 13 in *Handbook of Agricultural Economics*. Vol. 3, *Agricultural Development: Farmer, Farm Production, and Farm Markets*, edited by R.E. Evenson, P. Pingali, and T.P. Schultz. Amsterdam: Elsevier. In press.

Roldán, D., and C.F. Espinal. 2000. *¿Son posibles los acuerdos de competitividad en el sector agroproductivo?* Colección de documentos IICA Serie Competitividad No. 3.

Rondot, P., E. Biénabe, and M. Collion. 2004. "Rural Economic Organization and Market Restructuring: What Challenges, What Opportunities for Small Holders?" A global issue paper. CIRAD and World Bank. Preliminary draft for comments and suggestions.

- Rosegrant, M.W., R.G. Schleyer, and S.N. Yadav. 1995. "Water Policy for Efficient Agricultural Diversification: Market-Based Approaches." *Food Policy* 20 (3): 203–23.
- Sadoulet, E., and A. de Janvry. 1995. *Quantitative Development Policy Analysis*. Baltimore: Johns Hopkins University Press.
- Schütz, P., F. Balsevich, and T.A. Reardon. 2004. *Acceso de pequeños productores a mercados dinámicos: el caso de la carne vacuna en Nicaragua*. Michigan State University, Regoverning Markets, International Livestock Research Institute.
- Stanton, J.V. 2000. "The Role of Agribusiness Development: Replacing the Diminished Role of the Government in Raising Rural Incomes." *Journal of Agribusiness* 18 (2): 173–87.
- Stiglitz, J. 1998. "Markets, Market Failures, and Development." In *International Agricultural Development*, 3rd ed., edited by C. Eicher and J. Staatz. Baltimore: Johns Hopkins University Press.
- Strasberg, P.J., T.S. Jayne, T. Yamano, J. Nyoro, D. Karanja, and J. Straus. 1999. "Effects of Agricultural Commercialisation on Food Crop Input Use and Productivity in Kenya." International Development Working Paper No. 71, Department of Agricultural Economics, Michigan State University, East Lansing.

Swinnen, J.F.M. 2005. “When the Market Comes to You—or Not: The Dynamics of Vertical Coordination in Agri-food Chains in Transition.” Final report of the World Bank (ECSSD) ESW on Dynamics of Vertical Coordination in ECA Agrifood Chains: Implications for Policy and Bank Operations.

Timmer, C.P. 1988. “The Agricultural Transformation.” In *Handbook of Development Economics*, edited by H.B. Chenery and T.N. Shrinivasan. Amsterdam: North Holland.

———. 1997. “Farmers and Markets: The Political Economy of New Paradigms.” *American Journal of Agricultural Economics* 79 (May): 621–27.

———. 2004. “Food Policy in the Era of Supermarkets: What’s Different?” *EJADE, The Electronic Journal of Agricultural and Development Economics* 1 (2).

Van der Vorst, J.G.A.J. 2005. “Performance Measurement in Agrifood Supply Chain Networks: An Overview.” In *Quantifying Supply Chain Performance*, edited by C. Ondersteijn. Amsterdam: Kluwer.

Van Zyl, J., B. Millor, and A. Parker 1996. “The Agrarian Structure in Poland: The Myth of Large Farm Superiority.” Policy Research Working Paper No. 1596, World Bank.

Von Braun, J., H. De Haen, and J. Blanken. 1991. "Commercialization of Agriculture under Population Pressure: Effects on Production, Consumption, and Nutrition in Rwanda." Research Report No. 85, International Food Policy Research Institute, Washington, D.C.

Williamson, O.E. 1979. "The Transaction Costs Economics: The Governance of Contractual Relations." *Journal of Law and Economics* 22 (October): 233–61.

———. 1993. "The Evolving Science of Organization." *Journal of Institutional and Theoretical Economics* 149: 36–63.

———. 1996. *The Mechanisms of Governance*. New York: Oxford University Press.

Zaibet, L.T., and E.G. Dunn. 1998. "Land Tenure, Farm Size, and Rural Market Participation in Developing Countries: The Case of the Tunisia Olive Sector." *Economic Development and Cultural Change* 46 (4): 831–48.

ESA Working Papers

WORKING PAPERS

The ESA Working Papers are produced by the Agricultural and Development Economics Division (ESA) of the Economic and Social Department of the United Nations Food and Agriculture Organization (FAO). The series presents ESA's ongoing research. Working papers are circulated to stimulate discussion and comments. They are made available to the public through the Division's website. The analysis and conclusions are those of the authors and do not indicate concurrence by FAO.

ESA

The Agricultural and Development Economics Division (ESA) is FAO's focal point for economic research and policy analysis on issues relating to world food security and sustainable development. ESA contributes to the generation of knowledge and evolution of scientific thought on hunger and poverty alleviation through its economic studies publications which include this working paper series as well as periodic and occasional publications.

Agricultural and Development Economics Division (ESA)

The Food and Agriculture Organization
Viale delle Terme di Caracalla
00100 Rome
Italy

Contact:

Office of the Director
Telephone: +39 06 57054358
Facsimile: + 39 06 57055522
Website: www.fao.org/es/esa
e-mail: ESA@fao.org